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(54) **ADAPTIVE CONTROL FOR A REFRIGERATION SYSTEM USING PULSE WIDTH MODULATED DUTY CYCLE SCROLL COMPRESSOR**

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(57) ABSTRACT

A diagnostic system includes a controller adapted for coupling to a compressor or electronic stepper regulator valve. The controller produces a variable duty cycle control signal to adjust the capacity of the compressor or valve position of the electronic stepper regulator valve as a function of demand for cooling. The diagnostic system further includes a diagnostic module coupled to the controller for monitoring and comparing the duty cycle with at least one predetermined fault value indicative of a system fault condition and an alert module responsive to the diagnostic module for issuing an alert signal when the duty cycle bears a predetermined relationship to the fault value.

14 Claims, 16 Drawing Sheets

